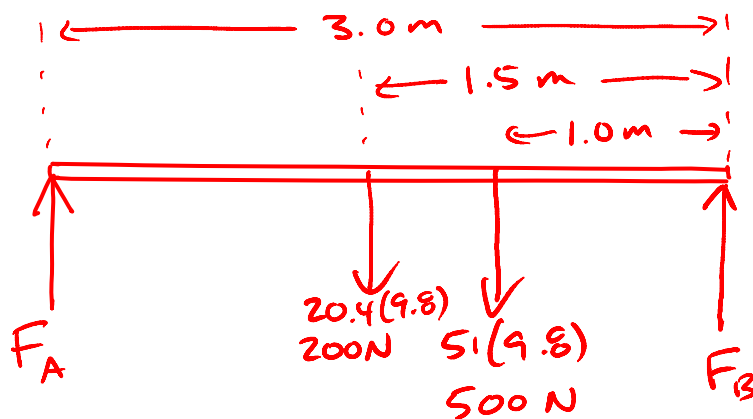
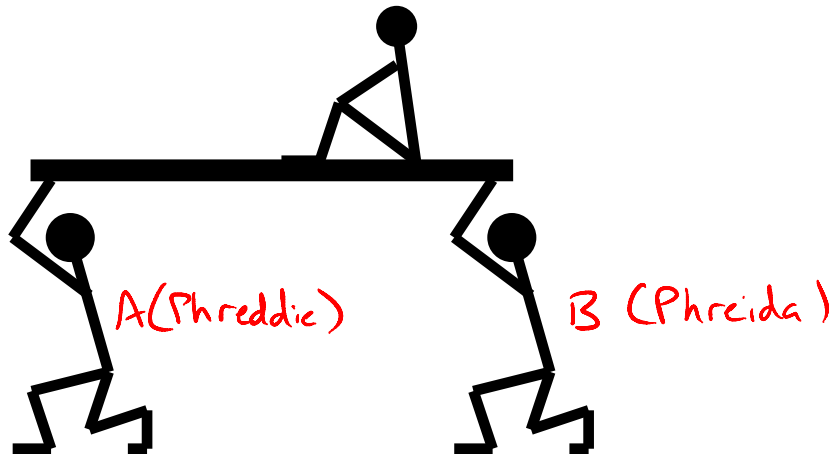


**Example #16.** Two students, Phreddie and Phreida Physics, are carrying Normie Neutron on each end of a 20.4 kg uniform plank that is 3.00 m long. If Normie's mass is 51.0 kg and he is sitting 1.00 m from Phreida, how much lifting force does each student use to carry Normie?

**Hint:** take the pivot at one end in order to remove the force supplied by one student from the situation.



$\Rightarrow$  choose pivot at  $F_B$  to eliminate this force from torque calculations

$$\Rightarrow \tau_{cw} = \tau_{ccw}$$

$$F_A(3) = 200(1.5) + 500(1)$$

$$\boxed{F_A = 267\text{ N}} \rightarrow \text{Phreddie}$$

$$\Rightarrow F_{\text{net}} = 0$$

$$200 + 500 = 267 + F_B$$

$$\boxed{F_B = 433\text{ N}} \rightarrow \text{Phreida}$$